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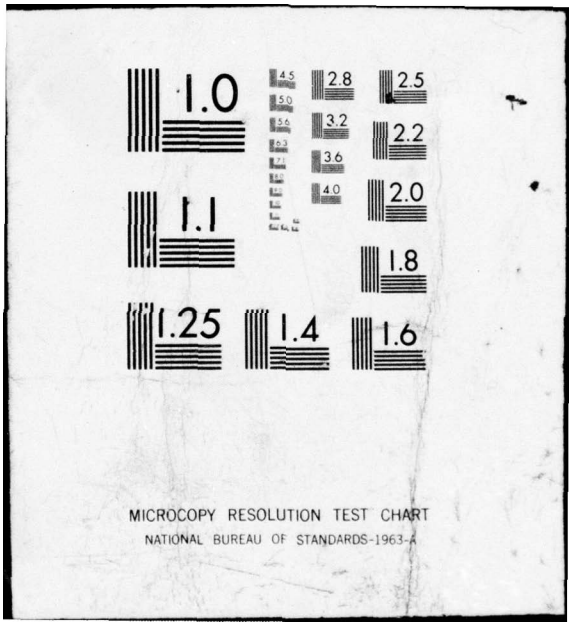
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PROBLEMS OF REGULATING SPECIALIZED TELECOMMUNICATIONS COMMON CARRIERS

Leland L. Johnson

May 1976

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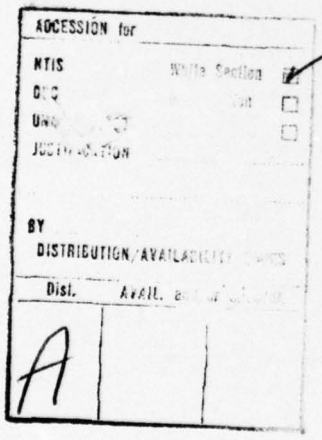

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PROBLEMS OF REGULATING SPECIALIZED TELECOMMUNICATIONS COMMON CARRIERS

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In contrast to the traditional view of the telephone industry as a natural monopoly to be regulated along classical public utility lines, the FCC's *MCI* decision in 1969, its *Specialized Common Carrier* decision in 1971, and its "open skies" policy announced in 1972 with respect to satellites, have permitted entry of new carriers competing with the Bell System, Western Union, and among themselves.**

In the specialized terrestrial common carrier field, we have the MCI Communications Corporation and its several affiliates, the Data Transmission Company (Datran), the Southern Pacific Communications Company, and United States Transmission Systems. Among satellite carriers, Western Union, the American Satellite Corporation, and RCA Globcom are operating, with other systems in planning stages. In the value-added, packet-switched field, two firms are currently supplying service: Telenet Communications Corporation and Graphnet Systems.

These developments have generated much controversy about conditions under which new and existing firms should be permitted to operate, their pricing structures and, more generally, how they should be regulated in light of the Communications Act of 1934. The purpose of this

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**_Microwave Communications, Inc._, 18 FCC 2d 953 (1969); *Specialized Common Carrier Services*, 29 FCC 2d 870 (1971); *Second Report and Order*, 35 FCC 2d 844, 1972; and *Memorandum, Opinion, and Order on Reconsideration*, 38 FCC 2d 665, 1972. In addition, the FCC's *Carterfone* decision in 1968 (13 FCC 2d 420) permitted under certain conditions the interconnection of customer-provided terminal and station equipment with the telephone network. The competitive effects of interconnection are also very important for the future development of the industry; however, they fall outside the scope of this paper.

paper is to discuss a) issues relating to the potential impact of competition, b) the problems posed for regulation, and c) prospects for the future of specialized carriers.

Three major issues emerge with respect to the introduction of competition:

1. Effects on the *distribution* of costs and benefits among users, especially between business and residential.
2. Effects on the *efficiency* with which facilities are built and operated, involving questions of whether undue duplication would arise, depending in part on the degree of economies of scale relative to traffic loads.
3. Effects on *innovation*, leading to reductions in costs for existing services and to introduction of new ones.

THE DISTRIBUTION OF COSTS AND BENEFITS

We have all heard the argument that large firms and other users able to take advantage of competitive offerings stand to gain--but at the expense of other customers, especially those dependent on the public message telephone network. Nationwide cost averaging has been used by Bell to cover the relatively high costs of some services and routes with the surplus revenues from others. New firms free to choose competitive areas of entry will be attracted to those where potential profits are highest (primarily private line services on lucrative routes between major metropolitan markets). This process of "cream-skimming" shifts the cost burden to services that remain monopolies.

There are two basic responses to competitive pressure, either of which would result in a shift of cost to the remaining monopoly services:

a) Bell would be permitted to compete directly by abandoning nationwide cost averaging and adjusting rates to reflect more accurately underlying costs. This would reduce or eliminate competitive entry, but only as long as the differentiated rate structure is maintained.

b) Bell would be required to maintain nationwide averaging for particular service categories. Firms would enter under the protective umbrella, siphon traffic from high density routes, and force a reallocation of Bell's costs to services and routes not subject to competitive pressure.

Numerous studies and other submissions under FCC Docket 20003* have addressed the degree to which cost and revenue requirements would be shifted from one user class to another as a consequence of competition, both from specialized common carriers and from interconnect companies. One study prepared for the independent telephone industry disclosed that by 1985 the increase in monthly revenue requirements as a consequence of the combined impact of interconnect and specialized common carrier competition toward independent telephone companies could amount to $3.28 and to $7.25 respectively for each residential and business main station.**

However, the conclusions of all such studies critically depend upon the particular assumptions employed. As the Chief of the FCC's Common Carrier Bureau has observed:

> The fact is that in order to reach the penetration level forecast in one industry-sponsored study, the specialized carrier industry would have to grow by a factor of 140 over the next decade, which amounts to a rate of 70% annually *compounded* [italics in the original].***

Another complication in assessing the effects of competition is the definition of boundaries between services that are the natural monopolies and those in which competitive entry would be in the public

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*FCC Docket 20003, *In the Matter of Economic Implications and Interrelationships Arising from Policies and Practices Relating to Customer Interconnection, Jurisdictional Separation, and Rate Structures.* Notice of Inquiry, 46 FCC 2d 214 (April 10, 1974).

**System Applications, Inc., *Regulatory Policy Changes in the Future of the Independent Telephone Industry*, January 1976, p. i-27.

***Walter R. Hinchman, "Developments in Data Services and Products," Remarks before Interface '76 Data Communications Conference, Miami Beach, Florida, March 31, 1976.

interest--for it is becoming increasingly apparent that these boundaries are fuzzy. The Commission's decision in the specialized common carrier case was premised on the notion that a clear distinction existed between the public switched telephone network, generally deemed to be a natural monopoly, and private line services where competition might provide a feasible alternative. As noted by AT&T:

> The FCC concluded that the specialized common carriers would not divert business from the telephone companies or "pose a serious threat to the established carriers' price averaging policies." On the contrary, the FCC said that the development of such specialized common carriers actually would increase the revenues of existing carriers by expanding the size of the communications market.*

However, some services offered by the specialized carriers are taking on progressively more of the characteristics of message toll service--partly as a consequence of the Commission's decision to permit the specialized carriers access to foreign exchange (FX) and to common control switching arrangement services (CCSA) in their agreements with Bell for interconnection to permit end-to-end service.

As the Chairman of the FCC has noted:

> . . . let me reiterate my own opinion that the Commission's CCSA and FX decision should be read as approaching the outer limits of permissible private line offerings. I do not believe that any encroachment by any specialized carriers upon traditional MTS or WATS services should be tolerated.**

As one salient example, consider MCI's "Execunet" introduced in 1974. In mid-1975 the FCC concluded that this service was essentially a switched public telephone service similar to Bell's offering, and that the service should therefore be withdrawn. MCI immediately appealed to the Courts, and at this writing the situation remains unsettled.

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*American Telephone and Telegraph Company, "The Crisis in Telecommunications, Discussion and Proposed Resolution," mimeo, New York, undated.

**Address by Richard E. Wiley before the 87th Annual Convention of the National Association of Regulatory Utility Commissioners, Boston, Massachusetts, November 3, 1975.

The difficulties of assessing the effects of competition arising from the fuzzy boundaries are compounded by the relationships between the demands for various services--even though they appear to be distinct. One consideration that has been neglected in the past debate is the *cross* elasticity of demand existing between private line and other services. Availability at reduced rates of private line service tying together only two points, although apparently different from both WATS and public message toll service, nevertheless can draw traffic from both. With progressively lower-priced private line services (and with specialized carriers offering some switching capability for additional flexibility), a firm may find it advantageous to purchase one or more private lines to *each* of its scattered branch offices or to other points where it has a high traffic volume as a partial substitute for using the switched public network. (In the extreme and wholly theoretical case, were the price of private lines to fall to *zero*, then everyone would prefer to purchase a private line to *each* point to which communication is desired as a total substitute for message toll services!)

If competitive entry continues in the coming decades, and given the potential effects of cross elasticities of demand, public message service may become increasingly confined to residential and small business use. Expanding upon the approach employed in previous studies--such as the SAI study noted above--one could quickly conclude that cost allocations to this increasingly small proportion of the total long distance market, and to local telephone service, could become very large.

At the same time, several mitigating circumstances need be carefully taken into account. First, although the noncompetitive message toll portion of the industry might fall as a *proportion*, it nevertheless is expanding at a rapid rate, measured in absolute terms. Projections covering a 10- or 15-year period must take into account the fact that growth is likely to continue and provide a progressively larger base to cover costs of operation. Table 1 shows the rapid increase in

Table 1

INTERSTATE MESSAGE TOLL TELEPHONE TRAFFIC
BELL SYSTEM

Year	Number of Messages		Paid Minutes per Message		Total Message Minutes	
	Business	Residential	Business	Residential	Business	Residential
	(Billions)				(Billions of minutes)	
1962	.53	.54	6.36	7.76	3.4	4.2
1963	.60	.60	6.41	8.02	3.8	4.8
1964	.64	.66	6.40	8.28	4.1	5.4
1965	.72	.76	6.40	8.54	4.6	6.3
1966	.82	.85	6.41	8.86	5.3	7.5
1967	.86	.91	6.38	9.03	5.5	8.2
1968	.99	1.07	6.34	9.22	7.3	9.9
1969	1.14	1.22	6.34	9.40	7.2	11.5
1970	1.24	1.33	6.35	9.50	7.9	12.6
1971	1.36	1.43	6.20	9.47	8.4	13.6
1972	1.49	1.60	6.10	9.61	9.1	15.4
1973	1.71	1.79	6.08	9.77	10.4	17.4
1974	1.80	1.90	6.09	9.97	11.0	18.9

SOURCE: Data computed from "Bell System Selected Interstate Data under the Division of Revenues Contracts and Long Lines Statistics, 1950-74," April 1975, pp. 107, 118.

interstate message toll service for business and residential use. The number of messages is increasing for both categories, and the length per residential message is also rising. As a consequence, between 1962 and 1974 there was more than a fourfold increase in residential message minutes. The number of message minutes for residential use alone of 18.9 billion in 1974 was equal to the *combined* total for business and residential as recently as 1969. Although we cannot assume that future growth will be as rapid as that shown in Table 1, the continued growth of residential service and the possible continued growth of business traffic even with some diversion to competitive services, would reduce pressures for rate increases in non-competitive long distance and local telephone service.

Second, one must assume continued technological advance over the long time period of concern here. In particular, the potential commercialization of fiber optics technology and continued development and installation of electronic switching equipment must be considered. Although we do not know the extent to which unit costs would decline as a consequence of these and other possibilities, they would work in the direction of benefiting residential and other small users.

Third, attractive possibilities exist for pricing policies *within* a service category. Take for example the objective of maintaining "universal" telephone service and, especially, of serving low income groups on reasonable terms. Expanded use of "lifeline" service, involving a low monthly flat rate with an allowance for a few free calls and with metered service for additional calls, immediately comes to mind. Today, about 90 percent of residential telephone subscribers and more than a half of the business subscribers in the U.S. pay a flat monthly rate for telephone service for an unlimited number of local calls. This policy permits one residential user to tie up for hours on end costly local switching and distribution facilities while another customer, paying the same monthly rate, uses the telephone for only a few minutes a week.

Because of gross disparities between rates and costs for flat rate service telephone companies are moving toward usage-sensitive pricing. It is being adopted in a number of states on either a mandatory or optional basis. California, for example, requires usage-sensitive pricing for businesses in large cities. The state also has a lifeline service for residential subscribers involving a lower monthly rental flat rate service (in Los Angeles $3.00 vs. $5.90) which includes 30 local calls per month plus 5 cents for each five-minute increment.

Of course, with payments on a per call basis a family may end up paying much more with metered service than with flat rate service. However, with metered service and a relatively low basic monthly rate, telephone service can be made *available* for segments of the population under conditions more favorable than those today. If individuals then *choose* to use the telephone extensively, they should be free to do so in the same way that they make choices among all the other commodities and services. The critical consideration is that for basic high priority use, telephone service would be available under favorable terms despite the fact that competition may force some redistribution of costs toward message toll and local service.

Fourth, a particularly disconcerting aspect of the current controversy is the underlying assumption that whoever benefits from competition keeps the whole amount and whoever loses thereby suffers irrevocably. There is little recognition of the fact that cost savings to one group may be *passed on* at least in part to another group. In particular, little consideration is given to the possibility that cost reductions to the business community would be passed on to consumers--including the low income groups whose interests everyone seems to want to protect. Yet a reduction in telephone costs to business enterprise, as with reductions in costs arising from all other factors, are to some extent passed on to customers. Using rudimentary tools of economic theory,

one can show that even a monopolist will pass on a portion of any cost reduction to its customers.*

In summary, we cannot predict confidently on the basis of current empirical analysis the long-term effects of specialized common carrier operations on rates to residential and small business users unable to take advantage of competitive offerings. Much depends upon the growth rate of specialized common carrier services, the competitive response of Bell, and the overall continued growth of both monopolistic and competitive services as a consequence of continued growth in national income, the substitution of telecommunications for other services, and other factors. However, since firms that do take advantage of competitive offerings can be expected to transfer some of the benefits to ultimate consumers, the use of measured local telephone service to provide "lifeline" service to low income groups, and continued technological advance tending to reduce the cost of *all* telecommunication services (though not necessarily in the same proportion) will benefit these users. These considerations, combined with the fact that nearly universal telephone service has already been obtained in accordance with provisions of the Communications Act of 1934 "to make available so far as possible, to all the people of the United States a rapid, efficient, nation-wide and world-wide wire and communication service with adequate facilities at reasonable charges," suggest that the growth of specialized common carrier services can hardly be expected to jeopardize the nationwide telephone system or seriously to disadvantage low income groups.

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*A profit maximizing monopolist operating with constant marginal costs and facing a linear demand curve would reduce prices by *one-half* of whatever marginal cost reduction is afforded, either through lowered telephone rates or through other factors that reduce its costs of doing business. When a few firms are competing as oligopolists, the theoretical analysis is more complicated, but it would remain generally true that cost reductions would be passed on at least in part to consumers. Under conditions of "pure" competition, involving very large numbers of firms, the proportion passed on would depend in part on the price elasticity of demand facing the industry.

EFFICIENCY

The natural monopoly argument is predicated on the notion that the economies of scale are so large that construction of facilities by separate entities would be wasteful. Why build a separate transmission facility, say between Chicago and St. Louis, when, as has been so frequently alleged, expansion of existing facilities can perform the same function at a lower *incremental* cost?

On theoretical grounds there is a straightforward answer: Let the market decide. Let the existing carrier abandon nationwide pricing and compete with new entrants, subject to the constraint that its new prices remain at levels *no lower than* its long-run incremental costs of providing the service in question. If these incremental costs are indeed lower than the costs that competitors would incur in operating new facilities, then the competitors will be discouraged from entering, the duplicate facilities will not be built, and society will continue to benefit from the scale economies accruing from the natural monopoly. On the other hand, if these incremental costs are *higher* than those of new entrants, competition would become viable since new entrants would not be underpriced.

Unfortunately, two major problems arise in pursuing this approach. First is the enormous task of determining what in fact constitutes long-run incremental costs for particular services and routes. Serious practical difficulties arise of taking into account a) allocations among services and routes of plants with varying productive efficiencies, b) the impact on costs elsewhere in the system of expanding facilities in one segment, c) the length of time required for adjustments and the nature of those adjustments required to measure long-run effects, and d) a host of other considerations. Because of such difficulties, reams of exhibits have been presented before the FCC dealing with both principles of cost allocations and underlying data to support or attack particular tariff filings.

A second problem, related to the first, is that of predatory pricing. Many have argued that the monopolist would have an incentive to cut rates even below its long-run incremental costs in order to discourage

competition, while shifting the additional burden of these low rates to its monopoly, protected services. Even if it were possible to measure satisfactorily long-run incremental costs, the difficulty would remain of enforcing the constraint that the firm set rates no lower than that level. This problem, too, has played a leading role in the reams of filings that have accumulated in rate cases.

A salient example is AT&T's response to specialized carriers in offering its high-lo voice grade private line tariff originally to be made effective in January 1974. In supporting the tariff, AT&T asserted that without changing private line offerings Bell would lose $200 million of interstate revenue and more than $100 million in contribution to its overall system. After several months of delay while the FCC considered appeals of contesting parties, the high-lo tariff went into effect in June 1974 as Bell's first departure from nationwide rate averaging since 1893. High-lo rates filed by Western Union went quickly into effect as a countermeasure, and MCI moved to revise its tariff as well. At the same time, MCI opposed the AT&T filing on grounds that Bell had failed to produce evidence to support its contention that specialized common carrier competition was having or would have a substantial impact upon its operations. Datran took issue with the high-lo plan on grounds that the rate changes were not justified on the basis of underlying cost, and that they were designed to forestall competition in an area in which it had not yet had the opportunity to develop. After more months of deliberation, the FCC decided in January 1976 that, while agreeing with the high-lo approach in principle, a new tariff was warranted on grounds that insufficient cost data and other evidence had been presented by AT&T to support its previous filing. In response, AT&T filed a "multi-schedule" private line voice tariff three months later. It remains to be seen whether the new tariff will be subject to the same sort of objection by competitors as was the earlier one.

Another example is AT&T's introduction of Dataphone digital service (DDS) with plans to build a 96-city nationwide network. Similar to the

situation with the high-lo tariff, opponents questioned whether the rates accurately reflected underlying costs or whether they were "anti-competitive" or predatory--again a judgment that depends upon extraordinary complex issues. After extended controversy, the FCC authorized in late 1974 the proposed Dataphone digital service tariff rates to go into effect--but initially for only a five-city network for a one-year trial period. For an additional 19 cities data users were to pay higher private line rates during the trial period. In May 1975 AT&T's rates for Dataphone digital service attracted heavy fire in testimony by Datran and the Independent Data Communications Manufacturers Association. An accumulation of 15 exhibits was intended to demonstrate that DDS rates were "anticompetitive" and that the cost basis was substantially understated by AT&T. At this writing the case has not been settled, but the Commission notes that "We agree with AT&T that the volume and complexity of the findings filed requires considerable study in order adequately to reply to them."*

This behavior is quite consistent with what one would anticipate. Once the specialized carriers are permitted by the FCC to operate, and after they have been successful in forcing AT&T to provide interconnection facilities on reasonable terms, they could be expected to oppose attempts by AT&T to compete with them through abandoning nationwide price averaging. Clearly, it is in their interest for Bell to maintain relatively high previous rates on the lucrative, high-density routes, and to be precluded from offering new services on highly favorable terms. On the other hand, Bell poses a powerful threat if it is able to cut rates and absorb the difference in its noncompetitive services.

Moreover, controversy has arisen not only between the specialized carriers and Bell but among the specialized carriers themselves. As one example, in mid-1974 MCI objected to the domestic satellite service tariff filings by Western Union and by American Satellite Corporation because of the alleged refusal of the two companies to reflect in their rates distance-insensitive cost characteristics of satellite technology. Since the cost of satellite circuits is independent of distance,

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*As quoted from *Telecommunications Reports*, April 19, 1976, p. 36.

some have alleged that satellite circuits should be priced independently of distance. This would open the market for which satellites have a comparative advantage--long routes spanning many hundreds of miles--while leaving to terrestrial carriers the shorter routes over which microwave costs *are* a function of distance.*

When the FCC approved in 1974 a request by United States Transmission Systems, a subsidiary of ITT, to build a specialized common carrier system stretching from New York to Houston and serving major cities en route, several carriers objected on grounds that the entry of ITT would have an unduly severe competitive impact, especially since this would involve an international carrier entering into the domestic field with presumably the possibility of reciprocal favored treatment by two arms of the same company.

In early 1976 Graphnet filed an objection to the ITT Domestic Transmission System's application for a packet-switched digital data communications network as a threat to value-added service by virtue of ITT's size, its economic strength, and its common carrier status, particularly in the international field.

Despite the massive filings in rate proceedings in recent years, we still cannot say with assurance whether predatory pricing is now taking place on a widespread scale or whether much waste and duplication is arising as a consequence of facilities being built by specialized carriers. But with respect to the latter question there are promising developments. One is the shared use of facilities by the specialized carriers. For example, agreement

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*Without elaborating here, I have argued in another paper that this line of reasoning is incorrect and that, on the contrary, it may be socially optimal for satellites to compete for both short- and long-distance traffic. This discussion is contained in my comments on a paper by Kenneth B. Stanley, "Pricing of Satellite Services in the International Telecommunications Industry" to be published in Harry Trebing, ed., *New Challenges in Public Utility Pricing*, forthcoming.

was reached in 1974 between Datran and the Southern Pacific Communications Company to co-locate and jointly build microwave networks linking St. Louis, Chicago, and points along the East Coast. Carriers have of course had a long history of leasing back and forth facilities from others--even competitors. Most notably, the recent agreement reached between Bell and the specialized carriers with respect to Bell's distribution facilities, including FX and CCSA, will help to forestall uneconomic duplication.

More generally, we may see the emergence of "carriers' carriers," whose express objective would be to build transmission facilities for use by other common carriers. The latter, providing custom-tailored services to a wide range of users would, in effect, share in the development, construction, and operation of facilities having large economies of scale. Perhaps the best emerging example of this arrangement is the provision by AT&T for facilities used by the packet-switched, value-added carriers. While AT&T is itself a common carrier, one could imagine in the future a firm whose *entire* business consists of leasing facilities to other common carriers.

INNOVATION

A major objective in the FCC's decision in the specialized common carrier case was to stimulate the development of innovative services. The FCC states in its First Report and Order in Docket 18920 that:

> While there may be some overlap between the services proposed by the applicants in the present offerings of the established carriers, we find sufficient warrant for the staff's conclusion that the applicants are seeking primarily to develop new services and markets, as well as to tap latent, but undeveloped sub-markets for existing services, so that the effect of new entry may well be to expand the size of the total communications markets.*

**Specialized Common Carrier Services*, 29 FCC 2d 870, at 906, 1971.

Since that time much controversy has arisen about whether the services offered by the new carriers are in fact innovative where obvious difficulties arise of quantitatively determining the differences between old services, slight modifications, and major changes. Thus, in its 1975 stockholders' report, MCI lists five new services introduced during the last six months of 1975: Quick-line, Execunet, Tel-analysis, Tele-management, and Advanced Private Line Switching. Other carriers, including those employing satellite circuits, are offering other services tailored to needs that, allegedly, were not previously being well met.

But the debate rages. According to AT&T:

> The FCC premised its *MCI* and *Specialized Common Carrier* rulings on the assertion that the specialized common carriers would offer "new and different" services, filling a "serious deficiency in the communications services to the public" by providing business communications "with unique and specialized characteristics." The FCC further took the position that it would authorize new specialized common carriers only if it were satisfied that the new companies would provide their own intercity facilities to offer genuinely novel services, and explore areas of demand not tapped by the telephone companies.
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> . . .
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> In practice the FCC's experiments in intercity services have not worked out as envisioned. The specialized common carriers, in general, have simply duplicated the intercity private line routes and the services already supplied by the telephone companies. By electing to serve only the most profitable routes, the specialized common carriers have been able to undercut the telephone companies' averaged rates.*

Moreover, the Chairman of the FCC has publicly indicated disappointment at the failure of specialized common carriers to move in more innovative directions than was expected at the time of the Commission's decision in 1971.

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*American Telephone and Telegraph Company, op. cit., pp. 6, 7.

> . . . I frankly have been disappointed that some new carriers--while preaching the virtues of diversity, innovation and specialized offerings in the private line market--have attempted to establish what, to me, are clearly basic message services. In my opinion, these attempts represent something of a breach of faith with the Commission and should be precluded by definitive administrative rulings.*

In the midst of this controversy, it is disquieting that little can be drawn from the economics literature to shed light on relationships between market structure and innovative activity. As emphasized in a recent study prepared for AT&T, one can draw several general conclusions from the evidence about relationships between particular kinds of innovative activities and market structure; but we have no satisfactory theory cutting across industries that identifies either a positive or a negative relationship between market characteristics and the overall rate of innovation. Whether a monopolistic or a competitive structure is most conducive to innovation depends upon numerous factors that cannot be systematized across industry lines and across time periods. With reference to the telecommunications industry, the study concludes:

> Existing theory and empirical evidence do not support the notion that an increase in total innovative output will occur if more firms are permitted to provide telecommunications services or compete in the provision of equipment to users of telecommunications services.**

Although we cannot say with certainty whether competitive pressures stimulate innovation, several factors must be borne in mind: First, it takes time to develop new services, test-market them, and expand them in full commercial form--all the more so if substantial amounts of R&D activity are required. Innovative services cannot be dusted

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*Richard E. Wiley, Address before the United States Independent Telephone Association, Dallas, Texas, October 16, 1975.

**Arthur D. Little, Inc., *The Relationship Between Market Structure and the Innovation Process*, January 1976, p. 1.

off the shelf and put on the market, but may require years of development in a laboratory and perhaps millions of dollars before they can be commercialized.

It is easy enough to enumerate the impressive achievements that AT&T, working through Bell Laboratories, has accumulated. But we must remember that AT&T has had decades of experience and many hundreds of millions of dollars with which to engage in R&D. Expenditures by Bell Laboratories in 1973 were about $420 million in comparison with the approximately $30 million of total *revenue* earned by the specialized terrestrial common carriers in 1975.* Something would indeed be awry if, with all that effort, a long list of accomplishments could not easily be delineated.

Bell's competitors are barely off the ground. It is simply too early to determine the extent to which they will provide new and innovative services. To this point, much of their energies have been devoted to litigation directed to, among other things, obtaining satisfactory interconnection agreements with AT&T to provide end-to-end service. After the FCC's MCI decision in 1969 and its more general specialized common carrier decision in 1971, subsequent years were clouded by controversy about the extent to which, and under what conditions, AT&T would provide interconnection for access to customer premises. In early 1974 the U.S. Court of Appeals in Philadelphia granted a preliminary injunction by MCI requiring AT&T to provide interstate foreign exchange (FX), local transiting facilities between specialized common carriers providing interstate services, and interstate private line services connecting common control switching arrangement (CCSA) facilities, as is now done for AT&T by its own Long Lines Department. After further court action, and strenuous efforts by the FCC, agreement was

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*This $30 million figure is an approximation made by the FCC's Common Carrier Bureau on the basis of the "Form P" that is required to be filed annually by the specialized terrestrial common carriers. This figure does not include the revenues of carriers using satellites, because, at this writing, they are not required to report in the same format.

finally reached among MCI, other carriers, and AT&T which outlined the technical and financial terms and conditions of interconnection arrangements. In the meantime, MCI filed an antitrust suit in March 1974 against AT&T, charging that AT&T and its associated Bell System companies "had attempted to monopolize and unreasonably restrain trade in the business and data communications markets in violation of federal antitrust laws."*

Under these conditions of instability and uncertainty it is not surprising that large-scale R&D projects are not being mounted by the new competitors. By its very nature, R&D is a risky endeavor. When the risk is compounded by years of court suits, appeals, injunctions, and the like, the environment is necessarily made less congenial for aggressive R&D activities.

However, one development that may have a substantial impact in the future is the entry into the specialized carrier field of large, well-capitalized firms with a long history of innovative activity in related fields. For example, a joint venture of International Business Machines, Comsat General Corporation, and Aetna Life and Casualty has been formed to develop a domestic satellite system for transmitting to relatively small earth terminals in close proximity to customers' premises. The application currently before the FCC specifies that about $250 million will be spent through 1979, when operations are to begin. According to the application, the system "will permit each customer with geographically dispersed locations to combine voice, data, and image communications into a single, integrated, private line switching network."** This development, bypassing terrestrial local loops and offering other advantages, could cut markedly the cost of long-distance communications for business users and pose a more serious

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*MCI Communications Corporation, *1975 Report to Stockholders*, June 6, 1975.

**Satellite Business Systems, Application before the FCC, December 1975.

threat to AT&T than that we have seen to date.

A second case is the entry of ITT through its subsidiary, United States Transmission Systems, which has been granted FCC authorization to build a system from New York to Houston as mentioned above.

A third case is the entry of RCA into domestic satellite service. Its activities began through RCA Global Communications and RCA Alaska Communications in early 1974, through use of Canada's Anik II satellite for private-line voice service. Subsequently, two RCA-owned satellites have been launched and are now in service.

CONCLUDING REMARKS

The telecommunications industry, including the contributions of specialized carriers, will likely continue to meet well the needs of our society. For reasons noted earlier, competition by the specialized carriers will probably not cause such a severe redistribution of costs toward residential and small business users that they will be seriously disadvantaged, or that the nearly universal telephone coverage that has so laboriously been attained will be eroded.

With respect to efficiency, use of commonly owned and leased facilities, the potential for development of "carriers' carriers," and more generally, continued growth of the overall telecommunications market to exploit economies of scale, will help. It is, of course, important to avoid umbrella pricing that would encourage uneconomic entry by competitors. Thus it is important to permit Bell and other carriers to respond with modified tariffs in the face of competition--but with the assurance that these reductions not fall below the cost of rendering the services in question. Because of the extraordinary difficulty in determining what these costs are, we can expect that one of the most serious problems arising from competition will remain the enormous administrative burden placed on the FCC and on the courts. The history of rate cases shows the appalling amount of time consumed in filings, pleadings, appeals, postponements, reconsiderations, etc.

Perhaps one of the most central needs, whose analysis falls outside the scope of this paper, is to simplify administrative processes that otherwise will become even more oppressive as the variety of services expands, as yet other firms enter, and as continuing technological progress offers new opportunities for public benefit--and for dissention.

This need for simplified procedures is all the more important in light of the danger voiced by many that the telecommunications field will become "cartelized"--a situation in which a few firms carve out markets for themselves and through "gentlemen's agreements" avoid head-on competition. In light of recent history, this does not appear to be an overriding present danger. Increasingly we are seeing firms competing head-to-head, and new firms invading markets traditionally held as monopolies. The danger is less that the FCC would permit or condone cartelization activities, but more that slow and cumbersome administrative processes introduce uncertainties that themselves discourage vigorous competition.

This paper leaves many questions unanswered. But it does suggest optimism with respect to the future of the industry. In contrast, many observers are disturbed by the apparent disarray emerging in the industry. In earlier decades the industry was simply left largely in the hands of the Bell System, and that was that. Fortunately, the inherent nature of the industry, able to take advantage of technological advances especially in the electronics field, has permitted striking reductions in costs and development of new services. This process, operating within the U.S. whose high income level and economic growth has induced a strong market pull for telecommunications services, had led to evolution of a nationwide, well-functioning system. Now we have new entrants, miniscule at this point in comparison with Bell, and with uncertain futures. We can expect to see mergers and consolidations, bankruptcies, entry by new firms and, in general, characteristics familiar in *other* industries where competition is permitted play and where progress has also been rapid. To take a chance in permitting similar forces to operate in the telecommunications field does not appear unduly risky.